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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/600,590	07/19/2000	BERNARD ASPAR	025219-268	5219

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EXAMINER	
KRUER, KEVIN R	

ART UNIT	PAPER NUMBER
1773	

DATE MAILED: 11/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/600,590	ASPAR ET AL.	
	Examiner	Art Unit	
	Kevin R. Kruer	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17,19-29,32-35,50 and 51* is/are pending in the application.

4a) Of the above claim(s) *2-12 and 25-28* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,13-17,19-24,29,32-35,50 and 51* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 July 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 17, 2005 has been entered.

Election/Restriction

2. Claims 2-12 and 25-28 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected method of making a compliant substrate, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 8.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1, 19-24, 32-34 and 50 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The original disclosure

does not contain support for a compliant substrate "having a buried layer of microcavities delimiting a superficial thin layer in the carrier such that stresses brought to said compliant substrate are absorbed in whole or in part by the tin layer and/or layer of microcavities."

Applicant argues said limitation is supported by the original claims and in Figures 1C and 2A. The examiner has fully reviewed the claims and figures and cannot find support for said limitation. Applicant is asked to specifically point where in the claims and figures said limitation is supported.

Claim Rejections - 35 USC § 102

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1, 13-17, 19-23, 29, 31-33, 35, 50, and 51 are rejected under 35 U.S.C. 102(b) as being anticipated by Bisaro et al (US 5,141,894).

Bisaro teaches a compliant substrate as depicted in Figure 4d. The laminate comprises a substrate (10), a monocrystalline zone (13) made by implanting ions through the substrate (col 4, lines 64+), a preliminary layer (11) on said monocrystalline zone (col 4, line 52+), an epitaxial growth layer (16) on said preliminary layer (col 5, lines 12+) which can be ion implanted (15), and a final layer of epitaxial growth layer (17) comprising GaAs. Ion that can be implanted include Mn, Al, Si, Cr, Fe, Ni Co, Cu, Ge, Sn, Zn Cd, Ti C, Cl, B, Ar, P, Le, Au, Ni, oxygen, hydrogen, fluorine, Si, Br, and S (col 3, lines 37+). The layers may comprise crystalline, semiconductor materials such as silicon, germanium, or the like (col 6, lines 34+). As the laminate is used as a

compliant substrate for epitaxial growth, said microcrystalline zone and/or microcavities are understood to absorb in whole or in part the stresses brought to said compliant substrate.

With regard to claim 1 and the claims that depend therefrom, the substrate layer is understood to read on the claimed "carrier layer;" The microcrystalline zone is understood to read on the claimed "buried layer of microcavities delimiting a superficial thin layer in the carrier;" and the epitaxial layer (16) is understood to read on the claimed "thin layer." The ion implantation (15) of the epitaxial layer (16) is understood to read on the claimed "implantation" step of claims 20 and 21. The ion is understood to read on the claimed '"foreign element" of claims 21 and 32 and the claimed "doping agent" of claim 22.

With regard to claim 35 and the claims that depend therefrom, the ion implantation of the substrate reads on the claimed "bonding interface" of claim 35. The ion implantation of the substrate is taught to create anchoring points that are centered at a depth Rp and having a width of 2.35XR0 (col 3. lines 46+). The epitaxial growth layer reads on the claimed "thin layer" of claim 35. The claimed "intermediate layer" of claim 15 is met by the preliminary layer (11). Bisaro teaches the intermediate layer may be made from GaAs (see Fig 4d), arsenic, gallium, Si, or a number of other materials (col 4, lines 57+). Since the layer is amorphous, the examiner takes the position it is inherently "non-homogeneous."

With respect to claim 13, the bonding energy between the epitaxial growth layer (16) (which reads on the claimed "the thin layer") and the epitaxial growth layer (17) is

altered by ion implantation. Ion implantation is known to affect the surface's roughness that would read on the claimed "defects."

Claim Rejections - 35 USC § 103

7. Claims 24, 34, 44, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bisaro et al. (US 5,141,894), as applied to claims 1, 13-17, 19-23, 29, 31-33, 35, 50, and 51 above, and further in view of Yamashita (US 3,742,318).

Bisaro is relied upon as above. Specifically, Bisaro teaches that the epitaxial growth layer (17) may comprise semiconductor layers such as silicon. Bisaro does not teach that silicon alloys may be utilized. However, Si, Ge, and SiC are known in the art as semiconductors that can be used interchangeably (see '318, col 3, lines 16+). In order to rely on equivalence as a rationale supporting an obviousness rejection, the equivalency must be recognized in the prior art, In re Ruff, 256 F.2d 590, 118 USPQ 340 (CCPA 1958). Thus, it would have been obvious to utilize SiC as the semiconductor of the epitaxial growth layers taught in Bisaro because Yamashita teaches that it is used interchangeably in the semiconductor art with Si and Ge.

Response to Arguments

Applicant's arguments filed October 17, 2005 have been fully considered but they are not persuasive.

Applicant argues the examiner has not set forth where each and every element of each and every claim rejected is found. After reviewing the rejection, it is not clear what elements Applicant believes are not covered by the rejection. Applicant is asked

to specify what elements the rejection statement allegedly does not set forth, so the examiner can fully address applicant's concerns.

With regards to claim 1, Applicant argues the implantation densities of the argon ion in the example disclosed in Bisaro is not sufficient for forming micro-cavities. In support of said argument, Huber Moriceau has filed a declaration stating that it is not possible, according to the disclosure of US 5,374,564, to from micro-cavities for gaseous species like hydrogen or rare gases under the conditions of the ion implantation disclosed in the example of Bisaro. Said declaration has been fully reviewed but is not persuasive. The examiner initially notes that US 6,624,047 and US 6,348,722 each teach micro-cavities can be formed at the implantation densities taught in Bisaro. Furthermore, the disclosure of Bisaro is not limited to the examples/preferred embodiments found therein. Bisaro teaches the imperfections are buried in said implanted layers at a depth of Rp (col 3, lines 45+). Said disclosure is consistent with the formation of a "micro-cavity." Thus, the declaration is not persuasive and the rejection is maintained.

With regard to claim 35, the examiner noted in the rejection that the ion implantation of the substrate read on the claimed "joining means" of claim 35. Applicant points out that claim 35 does not claim a "joining mean." The examiner agrees and has corrected the error. The examiner intended to say the ion implantation of the substrate reads on the claimed "bonding interface whose bonding energy is controlled to permit absorption of the stresses brought to said compliant substrate.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin R. Kruer whose telephone number is 571-272-1510. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on 571-272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin R. Kruer
Patent Examiner-Art Unit 1773